

INVITED ABSTRACTS

of reports reveals that structured reporting has undeniable advantages over free-text reporting. But, why this method has not been widely adopted?

Objectives: By listening to this lecture, the audience is expected to:

1. List the barriers to using structured reporting in clinical practice.
2. Describe the advantages of modular vs. template-based structured reporting.
3. Explain the importance of common data elements in standardized reporting.

Outline: There are multiple technical, conceptual, professional, and cultural reasons preventing radiologists to make use of structured reporting in their day to day practice. From the professional or clinical point of view, the flexibility of the system to provide the most relevant items while being reasonably short is the main reason why radiologists cannot report in a structured manner even if they like. Templates are the most popular containers of the predefined elements every radiologist plans to include in his/her report. But, the templates available for structured reporting are not comprehensive enough to cover all potential pathologies. In addition, there should be a basic standard to define how everybody describes a particular situation. These standards can be defined through the common data elements concept.

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AI in Radiology: From Theory into Practice

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Abstract

Background: Radiology is at the forefront of the revolution in medical imaging, which is mainly based on the progress made in machine learning and deep learning. New tools are being developed and made commercially available for implementation in radiology practice. AI solutions can intervene in different parts of the entire radiological workflow, and thus are likely to have a significant impact on the way that radiology services are being offered.

Objectives: By listening to this lecture, the audience is expected to:

1. Understand the basic principles of machine learning and deep learning.
2. Understand the different ways and possibilities by which these techniques can be applied in radiology.
3. Understand the advantages, disadvantages, and risks of implementing AI-based tools in radiology practice.

Outline: In this presentation, a brief historical overview is provided of the progress that has been made in the past few years in the field of artificial intelligence. The basic principles of machine learning and deep learning are explained. Radiology is at the forefront of these developments, with the ability to provide a huge resource of data. The way these new AI-based applications can be applied is explained, accompanying with advantages, disadvantages, and risks. Advice is provided on how to use these tools in clinical practice.

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AI Startups: The Need for Collaborative Research and Development

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Abstract

Background: In recent years, the rapid development of Artificial Intelligence (AI) has had a remarkable impact on the medical imaging domain. However, there remain challenges in utilizing state-of-the-art models in clinical practice. This talk focuses on challenges faced by AI startups in using machine learning in clinical practice.

Objectives:

1. How the machine learning methods solve a real clinical problem and what are its opportunities and challenges?
2. What are the future directions of AI in medical imaging?

Outline: The first part of the talk provides an overall review of some machine learning models developed for solving medical imaging problems. The second part of the talk presents some of the main challenges in utilizing state-of-the-art machine learning in medical imaging applications. These challenges include interpreting complex models, incorporating causality in our models, working with longitudinal data, model